

NEWS OF THE AMERICAN RADIO WORLD

HOPEFUL RADIO SAFE

Amateurs Advised to Disconnect Antenna and Ground Wires.

PRECAUTIONS SUGGESTED

Operators Told Not to Attempt to Get Results While Storms Are in Progress.

One of the most debated questions among radio amateurs and broadcast listeners is whether a man who hangs out an aerial hangs out at the same time an invitation to every lightning bolt in the vicinity to come and pay him a visit. The warmth of the debate reaches its greatest height when one of the participants is the unscientific but forceful landlord of an apartment house and the other is a tenant.

The question is answered by G. K. Thompson, radio superintendent of the American Radio and Research Corporation, as follows:

"You should harbor no fear that your radio installation will attract lightning. The chances of lightning striking your home this summer are no greater than the chances last summer. You should make it a point, however, to install such safety devices as will render harmless the currents induced in your antenna by lightning bolts striking in the neighborhood."

Mr. Thompson, in discussing lightning, divided the subject into three parts, the protection of the house, the operator and the set.

He suggests for the house the installation of a lightning switch or a grounded short gap of approved design, avoiding the purchase of state base, switches, kxps or other devices, which do not support the ground conductor at least five inches out from the wall of the building. A good ground conductor should be used, running directly as possible to a good ground connection, such as a water pipe.

"Have the installation approved by your local inspector," he advises, "so that in case any damage to the building by lightning ever comes to pass, the validity of the radio installation will not be questioned."

In considering the protection of the radio set itself from possible damage from heavy electrical discharges Mr. Thompson says:

"The best precaution to follow is to disconnect antenna and ground lead wires from the terminals of the set before the thunderstorm breaks. If you do not care to disconnect the set, a protected gap should be purchased and connected across the antenna and ground terminals on the instrument. A substitute for such a gap could be made by the use of a small piece of wire, which is bent into the form of a U-shape, and is fastened to the terminals on the base being permanently connected to the antenna and ground terminals of the receiving set. If the latter terminals are mounted close together a discharge gap may be provided by clamping two ordinary sewing needles in the terminals, separating the points by the thickness of a piece of paper. For maximum protection, however, complete disconnection of the receiving set from antenna and ground connections is advised."

These suggestions are made for personal safety:

"Don't attempt to operate the set while a local thunder storm is in progress. You can hear nothing but static discharges, the elimination of which is entirely beyond your control."

"Don't touch the ground wire or the antenna lead wire while the storm is in progress."

"If you use a lightning switch don't touch it while the storm is in progress, even though it may not be set in the grounded position."

ENGINEER EXPLAINS THEORY OF TUNING FOR AMATEURS

Van Dyck Makes Plain How Circuits Are Put in Accord by Varying Capacity and Inductance With Condenser and Inductor.

By A. F. VAN DYCK.

Radio Engineer, General Electric Co.

The second part of a radio receiving system, the antenna being the first part, is the one which accomplishes the "tuning" of the system. Tuning is the process of adjusting the receiving apparatus to be in electrical accordance with any transmitting station it is desired to receive.

When a receiving station is excited in tune with a transmitting station the signals received will be loudest, and if not in tune the transmitting station cannot be heard. We should understand now what it means to be "in tune," and the following explanation is given, not as an exact one technically, but as one which will give a beginning thought on the subject to the layman.

Every one is familiar with the certain features of stringed musical instruments. In the piano, for instance, various lengths of wire are used for various notes. A wire with a certain length, tension and material when given a mechanical blow vibrates at a certain rate, giving out a note whose pitch is that particular rate.

If the wire were made longer, everything else being the same, the note given out would be lower. If the wire were made shorter the note would be higher. Why does a piano wire vibrate? Because it has two properties, inertia and elasticity.

"Elasticity is a property of material's families, and even air, by that name. Inertia is the property of matter by which it is difficult to get it into motion and, after going, difficult to stop it. It takes more power to start an automobile than to run it, on level ground, and it takes power to stop it."

When a piano wire is started in motion by a blow it starts to move but keeps going, the swing being kept because the ends are held. It bounces back due to its elasticity, and keeps on vibrating until all the energy of the blow has been used up.

An electric circuit behaves the same way. It has electrical inertia and electrical elasticity, and if struck an electrical blow will vibrate electrically, which is called resonance. The rate at which it vibrates is determined by the electrical length of the circuit, just as the piano wire is determined by its length.

Since the wires are in tune each wave vibration rate depends upon the mechanical length of the wire. When two piano wires have exactly the same length, tension, etc., they are said to be in tune. Also, they can have different lengths, still be in tune, if their tensions (elasticities) are properly adjusted. If two piano wires exactly in tune are put near each other and only one of them is struck both will vibrate because the one struck vibrates and each sound wave given off by it strikes the other wire and moves it slightly.

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VACUUM TUBE SALE TO HELP AMATEURS

Navy Action in Disposing of 30,000 Meets Approval.

Thirty thousand vacuum tubes, originally designed for transmitting but capable of detecting and amplifying as well, are to be sold in lots of 10,000 each next Thursday at the United States Navy Central Sales Office at the Navy Yard in Washington. The sale of these tubes will help materially to supply the demand of amateurs throughout the country.

The tubes were bought several years ago for the navy, but are to be disposed of now for the double purpose of realizing on the radio material now classified as surplus and of helping out radio enthusiasts who have sets complete except for the magic tubes which are the heart of the outfit.

The tubes, which are described as C. G. 1162 radio transmitting vacuum tubes, may be used as detectors and amplifiers when used in a transmitting set, or as an ordinary receiving tube socket by relighting the receiving tube socket at 45 degrees from the usual slot. This is essential on account of the retaining pin in the lamp base being angled 45 degrees from the position of the retaining pin as ordinarily found on receiving tubes being sold to-day.

Purchasers of the tubes are required to sign an agreement to sell the tubes for original use only, and to give notice that the tubes are licensed only for amateur, experimental, or entertainment use, with additional information concerning the safe use and age of the tubes and the need for realising the need for the tubes as a source of supply.

The tube sold in a five watt tube and when used for transmitting purposes requires a filament voltage of 6 volts. The plate voltage used is approximately 300 volts. In order to give purchasers an idea of the efficiency of the tube for receiving, tests were made in comparison with the CW 923 tube, called the VT-1 and J, and the SE 1444.

The performance of the CG 1162 tube fairly closely approximated that of the CW 923 as an oscillator and amplifier, and of the SE 1444 as a detector. The current plate current of the CG 1162 is much higher than that of the CW 923 or the SE 1444, but it compensates in original greatly decreased with an increase of plate voltage, especially as compared with the C. W. 923. The CW 923 tube is a gas tube having a coated filament and is not similar to any commercial tube. The SE 1444 can be compared very favorably with the so-called "hard" tubes now sold for amateur and experimental use.

What is necessary is simply to make the natural rate of the swing at which the tube vibrates, or the length of the length, etc., correspond exactly to the rate of the pushes applied. Everything has a natural period of vibration, including electric circuits, with an increase of plate voltage, especially as compared with the C. W. 923. The CW 923 tube is a gas tube having a coated filament and is not similar to any commercial tube. The SE 1444 can be compared very favorably with the so-called "hard" tubes now sold for amateur and experimental use.

Transmitting stations can be adjusted to send out waves of any number per second desired. When a transmitter is described as sending out a wavelength of 300 meters, it means that the successive waves from that station are 300 meters apart. Since the waves travel at a certain speed (equal to that of light) and

the speed of light is 186,000 miles per second, the frequency of the waves is 1,000,000 per second, or 1 megacycle.

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Parasol Set Wins Women to Radio



Thousands of pocket receiving sets have been built by amateurs all over the country without arousing any enthusiasm on the part of women. This is probably because they have no pockets in which to put pocket sets.

When this startling fact percolated as far as Schenectady, John B. Taylor, consulting engineer of the General Electric Company, did some profound thinking. The result is not a pocket set, but a parasol set. Starting at this idea, the parasol as a container is not the most unusual thing about the new set. In most pocket sets the owner cannot stray far from his aerial, and ground, or else must bring them with him, which is inconvenient to the point of impossibility. In the parasol set, this is done away with. It is all there in the parasol.

The new outfit which adds only eight ounces to the weight of the parasol, consists of a loop aerial of braided copper wire, which is naturally flexible, sewed to the covering of the parasol in the form of a stripe around the edge. In parallel lines. An end leads through the handle.

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EFFECTS OF THE RADIO FIELD

Cavalleria Rusticana to Be Broadcasted in Full by WJZ—William J. Flynn, Former Secret Service Chief, to Talk on Check Forgers.

The program for the week of the various broadcasting stations, which can be heard within a radius of several hundred miles of New York, are presented herewith. During the week The New York Herald will print the daily programs of the stations each morning.

Times given are daylight saving. Tune instruments for 360 meter waves, except in the case of WJZ, which sends on 1450 meters.

Station WJZ—Newark, Westinghouse.

9:00 A. M.—Agricultural reports